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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy	DATE: February 2011
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APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE							
1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 7: <i>Operational Systems Development</i>				PE 0205632N: <i>MK-48 ADCAP</i>							
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	33.621	26.234	39.288	-	39.288	29.009	25.927	26.528	27.079	Continuing	Continuing
0366: <i>MK 48 ADCAP</i>	27.646	26.234	39.288	-	39.288	29.009	25.927	26.528	27.079	Continuing	Continuing
9999: <i>Congressional Adds</i>	5.975	-	-	-	-	-	-	-	-	0.000	5.975

A. Mission Description and Budget Item Justification

A. (U) Mission Description and Budget Item Justification:

MK-48 ADCAP (Advanced Capability) Research, Development, Test and Evaluation (RDT&E) program executes incremental development of weapon performance improvements in three development product areas: (1) Common Broadband Advanced Sonar System (CBASS), (2) Advanced Processor Builds (APBs), and (3) Torpedo Technology Insertion. The budget enables Acquisition Category (ACAT) III development to address Chief of Naval Operations (CNO) defined capability-based requirements and mission needs. This Program Element (0205632N/0366) is tied to development programs that leverage a joint United States/Australia Armaments Cooperative Project (ACP) to develop MK-48 ADCAP CBASS; and Future Naval Capability (FNC) technologies developed by the Office of Naval Research (ONR).

(U) Countermeasure (CM) sophistication and availability on the open market directly affects ADCAP kill proficiency and its ability to counter rapidly evolving threats. The focus of the MK-48 ADCAP torpedo Research and Development (R&D) program from FY 2001 and out shifted from being primarily concentrated on Software Block Upgrade efforts towards coordinated hardware upgrades, rapid Commercial-Off-the-Shelf (COTS) insertion, and APBs to rapidly upgrade the ADCAP to counter evolving threats and maintain robust performance. The CBASS program developed and fielded a broadband sonar capable of identifying CMs and discriminating them from the target. CBASS Phase I achieved IOC in FY 2006. The Commonwealth of Australia Royal Navy is jointly participating to develop CBASS Phase II to improve shallow water performance and signed a MOA extension Nov 2009. The MOA extension expires Nov 2019.

(U) The MK-48 ADCAP torpedo R&D program focuses on two specific areas near term: Torpedo APBs and hardware tech insertions. The CNO continues to stress shallow water (less than 600 feet) as a critical operating area to counter third world diesel electric submarines. Torpedo testing in shallow water has demonstrated that in-service ADCAP has less than full capability in this difficult environment. However, this testing, in conjunction with laboratory simulation efforts, has shown that significant performance improvements can be made by implementing changes to weapon tactics and software algorithms. Development, implementation, and testing of these changes is being accomplished under the Torpedo APB program. The APB program also leverages the RAN joint torpedo program and FNC technologies developed by the ONR in the areas of torpedo broadband signal processing, tactics processing, and alertment. The Torpedo tech insertion program will leverage from MK-54 Lightweight torpedo algorithms. Further hardware investment involves development of G&C replacement required to support production and development of Automated Test Equipment replacement to improve comprehensive system testing of full up CBASS Torpedoes.

(U) The Torpedo Technology Insertion program will provide for evolutionary torpedo improvements and upgrades (including the transition and testing of advanced technologies from the R&D community (6.2/6.3 and contractors). This approach will incorporate developmental testing of the FNC transitioning technologies for ADCAP upgrades in the areas of torpedo

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sensors, weapon/platform connectivity, warhead lethality, speed and depth. These efforts will continue torpedo development investment at a lower cost and shorter term than traditional torpedo programs.						
(U) A modification to the CBASS Spiral 4 program was directed by CNO to address a Fleet Urgent Operation Need (UON), which enables the early fielding of specific Spiral 4 capabilities. Development of these changes are being accomplished under the APB program and are referred to as the Torpedo UON Rapid Fielding (TURF) effort. The TURF effort was inserted into CBASS Spiral 4 and will be Fleet released in FY11, pushing spiral 4 IOC from 2nd Qtr FY12 to 4th Qtr FY12. The TURF effort also suspends APB 5 development that started in FY10 and delays the restart until 1st Qtr FY13.						
(U) Both FNC technologies and MK-54 Lightweight torpedo developments will be transitioned into ADCAP through Technology Insertion packages. Priorities for Technology Insertion are a new array to improve torpedo effectiveness, advanced processing, and advanced counter-countermeasure capability.						
It has been determined that program effectiveness can be improved by developing and delivering Automated Test Equipment (ATE) production restarts so development is planned to start in FY 2012. Additionally R&D to support production restart efforts on Guidance & Control (G&Cs) can be built to match up with 50 arrays and Afterbody/Tail Cone (AB/TCs) thus increasing inventory numbers.						
B. Program Change Summary (\$ in Millions)		FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget		34.235	26.234	26.746	-	26.746
Current President's Budget		33.621	26.234	39.288	-	39.288
Total Adjustments		-0.614	-	12.542	-	12.542
• Congressional General Reductions			-			
• Congressional Directed Reductions			-			
• Congressional Rescissions		-	-			
• Congressional Adds			-			
• Congressional Directed Transfers			-			
• Reprogrammings		-	-			
• SBIR/STTR Transfer		-0.590	-			
• Program Adjustments		-	-	14.071	-	14.071
• Rate/Misc Adjustments		-	-	-1.529	-	-1.529
• Congressional General Reductions		-0.024	-	-	-	-
Adjustments						
Congressional Add Details (\$ in Millions, and Includes General Reductions)						
Project: 9999: Congressional Adds						
Congressional Add: Small Business Technology Insertion						
		FY 2010	FY 2011			
		5.975	-			
		5.975	-			

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<u>Congressional Add Details (\$ in Millions, and Includes General Reductions)</u>		FY 2010	FY 2011
Congressional Add Subtotals for Project: 9999			
Congressional Add Totals for all Projects		5.975	-
<u>Change Summary Explanation</u> Technical: Not applicable. Schedule: Not applicable.			

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy								DATE: February 2011			
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0205632N: MK-48 ADCAP				PROJECT 0366: MK 48 ADCAP			
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0366: MK 48 ADCAP	27.646	26.234	39.288	-	39.288	29.009	25.927	26.528	27.079	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		
A. Mission Description and Budget Item Justification											
Notes: Articles reflect: FY 2010 - Continue Spiral 4 software development and testing; delivery of final report and completion of Spiral 4 DT/OT in FY 2012 with IOC in FY 2012;											
A. (U) Mission Description and Budget Item Justification: MK-48 ADCAP RDT&E program executes incremental development of weapon performance improvements in two development product areas: (1) APBs, and (2) Torpedo Technology Insertion. The budget enables ACAT III development to address CNO defined capability-based requirements and mission needs. This Program Element (0205632N/0366) is tied to development programs that leverage a joint United States/Australia ACP to develop MK-48 ADCAP; and FNC technologies being developed by the ONR.											
FY 2012 - APB Software upgrades will improve torpedo performance in challenging water, countered environments through incorporation of new algorithms designed to address broadband, multiband, classifications and tactics processing changes. Hardware technology insertions will improve weapon availability through development of a G&C replacement and an Automated Test Equipment replacement.											
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2010	FY 2011	FY 2012	
Title: TORPEDO APB Articles: FY 2010 Accomplishments: Continue development of Spiral 4 in preparation for software release (\$26,446K). Initiate development of APB 5 (\$100K). The APB technologies improve shallow water performance and increase the probability of kill. FY 2011 Plans: Finalize Spiral 4 Software development and start OT (\$16,134). Develop UON specific software version and support Quick Reaction Assessment (QRA) to field Phase 1 of TURF by 3rd Qtr FY11 (\$9,100), and Phase 2 of TURF by 4th Qtr FY11. FY 2012 Plans: Operational Support, Program Sustainment, and Spiral 4 OT (\$21,388K). Conduct development of the RDTE Guidance Control (G&C) initiative (\$11,500K) to support production restart efforts on G&C components so 50 G&Cs can be matched up with arrays and AB/TCs thus increasing inventory numbers. Start development of Automated Test Equipment (ATE) replacement (\$4,900).								26.546	25.234	37.788	
								0	0	0	
Title: OPERATIONAL TEST SUPPORT								1.100	1.000	1.500	

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy							DATE: February 2011				
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 7: <i>Operational Systems Development</i>				R-1 ITEM NOMENCLATURE PE 0205632N: <i>MK-48 ADCAP</i>			PROJECT 0366: <i>MK 48 ADCAP</i>				

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)				FY 2010	FY 2011	FY 2012
Articles:				0	0	0
<i>FY 2010 Accomplishments:</i> Provide for accreditation requirements and conduct analysis relating to Spiral 4 Software release planned in FY11.						
<i>FY 2011 Plans:</i> Continue Spiral 4 development. Complete TURF.						
<i>FY 2012 Plans:</i> Complete Spiral 4 OT.						
Accomplishments/Planned Programs Subtotals				27.646	26.234	39.288

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• WPN/3225: <i>MK-48 Torpedo</i>	56.134	43.559	42.493	0.000	42.493	54.648	60.002	64.760	65.808	Continuing	Continuing
<i>ADCAP Mods</i>											

D. Acquisition Strategy	
Sole Source Production Contract awarded in FY 2004 for MK-48 ADCAP MODS, Lightweight MK-54, and Common Broadband Advanced Sonar System (CBASS) kits, including Royal Australian Navy (RAN) units. A full and competitive procurement for MK46 Mod 7 CBASS production kits is planned with a FY 2010/2011 base year and four option years for FY 2012-2015.	

E. Performance Metrics
Milestone Reviews.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy											DATE: February 2011		
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT					
1319: Research, Development, Test & Evaluation, Navy BA 7: Operational Systems Development				PE 0205632N: MK-48 ADCAP				0366: MK 48 ADCAP					
Product Development (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	NUWC Newportt (NPT):Newport RI	12.515	-		11.500	Oct 2011	-		11.500	Continuing	Continuing	Continuing
Primary Hardware Development	C/CPFF	Progeny:Manassas VA	10.852	-		-		-		-	Continuing	Continuing	Continuing
Subtotal			23.367	-		11.500		-		11.500			
Support (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	WR	NUWC NPT:Newport RI	11.999	3.097	Dec 2010	5.015	Oct 2011	-		5.015	Continuing	Continuing	Continuing
Software Development	Various	Various:Not Specified	23.120	13.197	Apr 2011	3.672	Dec 2011	-		3.672	Continuing	Continuing	Continuing
Integrated Logistics Support	WR	NUWC NPT:Newport RI	2.243	-		0.263	Oct 2011	-		0.263	Continuing	Continuing	Continuing
Systems Engineering WCF	WR	NUWC NPT:Newport RI	17.163	0.587	Mar 2011	1.650	Oct 2011	-		1.650	Continuing	Continuing	Continuing
Systems Engineering	Various	NUWC NPT:Newport RI	0.110	-		4.900	Dec 2011	-		4.900	0.000	5.010	
Subtotal			54.635	16.881		15.500		-		15.500			
Test and Evaluation (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test & Evaluation	WR	NUWC NPT:Newport RI	9.288	1.298	Apr 2011	3.467	Oct 2011	-		3.467	Continuing	Continuing	Continuing
Operational Test & Evaluation	WR	Operational Test Force:Norfolk VA	6.090	0.943	Apr 2011	0.250	Nov 2011	-		0.250	Continuing	Continuing	Continuing
Modeling & Simulation	WR	NUWC NPT:Newport RI	8.569	1.176	Mar 2011	-		-		-	Continuing	Continuing	Continuing
Modeling & Simulation	C/CPFF	ARL / PSU:State College PA	4.700	1.000	Jun 2011	1.500	Dec 2011	-		1.500	Continuing	Continuing	Continuing
Test & Evaluation	WR	NUWC Keyport (KPT):Keyport WA	17.380	4.316	Apr 2011	6.400	Oct 2011	-		6.400	0.000	28.096	
Subtotal			46.027	8.733		11.617		-		11.617			

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Management Services (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/FFP	Alion Science:Mclean VA	2.255	0.425	Feb 2011	0.488	Oct 2011	-		0.488	Continuing	Continuing	Continuing
Travel	WR	NAVSEA:Washington DC	0.535	0.195	Feb 2011	0.183	Oct 2011	-		0.183	Continuing	Continuing	Continuing
Subtotal			2.790	0.620		0.671		-		0.671			

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		126.819	26.234		39.288		-	39.288			

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0205632N: <i>MK-48 ADCAP</i>	PROJECT 0366: <i>MK 48 ADCAP</i>

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Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0205632N: <i>MK-48 ADCAP</i>	PROJECT 0366: <i>MK 48 ADCAP</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 0366				
Torpedo Advanced Processor Build (APB) Software Development	1	2010	4	2016
TURF 1	1	2011	1	2011
TURF 2	3	2011	3	2011
Spiral 4	2	2012	2	2012
CBASS Spiral Development	1	2010	1	2010
TURF 1 Fielded	2	2011	2	2011
TURF 2 Fielded	4	2011	4	2011
CBASS IOC	4	2012	4	2012
APB 5 Development	1	2010	1	2010
APB 5 Development - Restart	1	2013	1	2013
APB 5 Developmental Testing/Operational Testing (DT/OT)	3	2010	3	2010
Quick Reaction Assessment (QRA 1)	2	2011	2	2011
Quick Reaction Assessment (QRA 2)	3	2011	3	2011
Spiral 4 OT	3	2012	3	2012
APB 5 DT/OT	3	2016	3	2016
Guidance and Production Restart Efforts	1	2012	1	2012
Automated Test Equipment Production Restart Efforts	1	2012	1	2012

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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	5.975	-	-	-	-	-	-	-	-	0.000	5.975
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification
Congressional add for FY10 Small Business Technology Insertion.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2010	FY 2011
<i>Congressional Add:</i> Small Business Technology Insertion	5.975	-
<i>FY 2010 Accomplishments:</i> Small Business Technology Insertion for Torpedo Guidance and Control Open Architecture initiatives and the development of architectural commonality between both heavyweight and the lightweight torpedoes.		
Congressional Adds Subtotals	5.975	-

C. Other Program Funding Summary (\$ in Millions)
N/A

D. Acquisition Strategy
Congressional Adds

E. Performance Metrics
Congressional Adds